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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,819	05/14/2007	Elke Zakel	7751P005	7190

7590 07/16/2010  
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EXAMINER
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NGUYEN, DUY T V

ART UNIT	PAPER NUMBER
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2894

MAIL DATE	DELIVERY MODE
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07/16/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,819	<b>Applicant(s)</b> ZAKEL ET AL.	
	<b>Examiner</b> DUY T. NGUYEN	<b>Art Unit</b> 2894	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 May 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5-9 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) 1-3 and 5-8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 9 and 12-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/22/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of **Group II (claims 9 & 12-16)** in the reply filed on 5/28/10 is acknowledged. Claims **1-3 & 5-8** are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention. Election was made **without** traverse in the reply filed on 5/28/10.

### ***Drawings***

2. **Figure 3** is objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "**42**" and "**11**" have both been used to designate "a frame". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Title Objection***

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Appropriate correction is required.

### ***Claim Objections***

4. The claims are objected because of the following reasons:

Re claim 12, line 1: delete "11" and insert --9-- instead, because claim 11 is canceled.

Re claim 15, (refer to specification and Fig. 1)

-line 2: insert --**second**-- in between "the" and "component".

-line 3: insert --**first**-- in between "the" and "component".

-line 4: delete "a" and insert --**the**-- in between "in" and "positioning device", because "positioning device" is prior claimed.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 9 and 12-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Lutz** (US 6,762,072) in view of **Tanaka et al.** (US 5,250,469, "Tanaka") and **Nakata et al.** (US 5,617,441, "Nakata").

**Re claim 9**, **Lutz** teaches, as shown in Figs. 2 & 5, a device for alternately contacting two wafer-like component composite arrangements comprising:

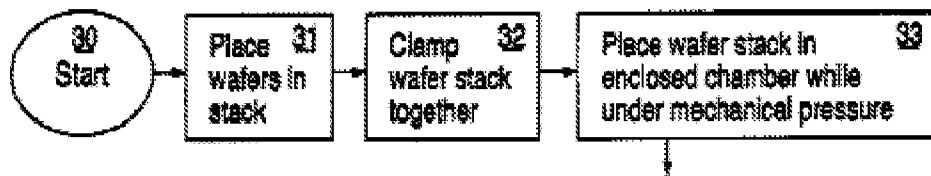
-a receiving frame (holder) (col. 2, lines 66-67 and col. 5, lines 25-31) (boxes 31 and 32) for supporting and holding a first component composite arrangement (wafer 11 and cap 14) (col. 5, line 25) on a transparent panel arranged in the receiving frame,

-a holding clamp (box 32);

-a positioning device (alignment unit) (col. 8, lines 20-23) for relative positioning of the component composite arrangements such that the contact metallization (bond frame 13, bond 18) (col. 2, line 42) to be joined together form contact pairs; and

-a pressure device (box 33) (col. 7, lines 42-45) for generating a contact pressure (mechanical pressure) between the contact metallization of the contact pairs (13, 18).

**Lutz** does also teach "Laser Beam either remain immobile or simultaneously move" (col. 5, lines 5-6) and "Box 40 provides an x-y stage to move the wafer relative to the laser scanner" (col. 7, lines 66-67). This encompasses "moved in parallel to the plane of extent of the component composite arrangement".



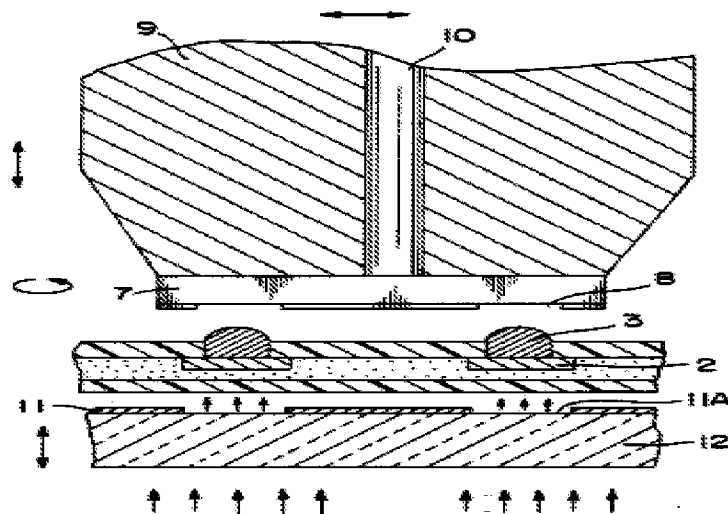
Lutz does not teach a first component composite arrangement on a transparent panel and a holding clamp for receiving a second component composite arrangement such that contact surfaces of the first and the second composite arrangements provided with contact metallization are arranged opposite one another, and to be activated for coverage of the respective transverse extent of the contact surface of the component composite arrangement is selected based on a distance to be traversed in relation to the first composite arrangement for acting upon a circular contact surface of the first component composite arrangement.

**Tanaka** teaches, as shown in Fig. 4, first composite arrangement (Fig. 4) on a transparent panel (12), and a holding clamp (IC holder) (col. 3, lines 5-11) for receiving a second component composite arrangement (IC chip 7) such that contact surfaces of the first

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and the second component composite arrangements (Fig. 4) provided with contact metallization (3, 8) are arranged opposite one another, and to be activated for coverage of the respective transverse extent of the contact surface (6A) of the component composite arrangement is selected based on a distance to be traversed in relation to the first composite arrangement (bottom part of Fig. 3) for acting upon a circular contact surface (6A) of the first component composite arrangement (bottom part) (Fig. 3).

**Tanaka** also teaches YAG laser (i.e. laser beam) separated from the first component composite arrangement by the transparent panel (Fig. 4).

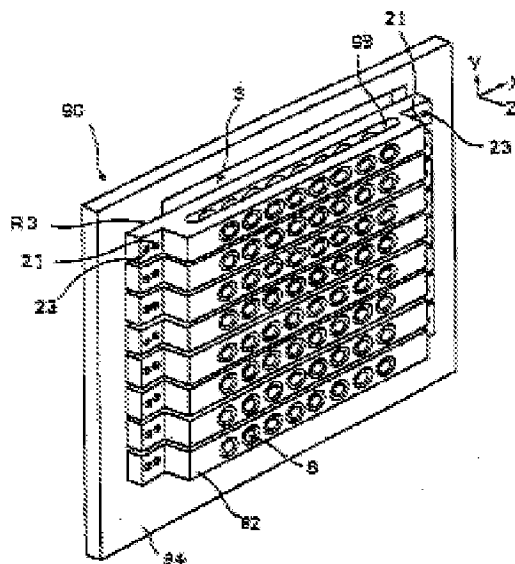
**FIG. 4**

As taught by Tanaka, one of ordinary skill in the art would utilize a transparent panel and a holding for contacting first and second component composite arrangements, because it aids in avoiding affecting an IC chip adversely due to thermal impact and thermal stresses (col. 2, lines 13-14).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught Tanaka in combination with Lutz due to above reason.

Lutz/Tanaka do not teach the diode laser composite arrangement is designed as a diode laser linear arrangement having a plurality of diode lasers arranged in a row which diode lasers are arranged on a diode laser mount; and wherein the diode lasers of the diode laser linear arrangement can be activated individually or in groups.

**Nakata** teaches the diode laser composite arrangement (8) is designed as a diode laser linear arrangement having a plurality of diode lasers (1) arranged in a row which diode lasers are arranged on a diode laser mount (94), and wherein the diode lasers of the diode laser linear arrangement can be activated individually or in groups (col. 4, lines 54-65, and col. 8, lines 31-44, Figs. 26-27).



As taught by Nakata, one of ordinary skill in the art would utilize the above teaching structure in order to achieve a diode laser composite arrangement having a plurality of diode lasers in a row, and by combining and modifying the teachings of Lutz and Tanaka,

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one would also achieve the arrangement of the diode laser composite arrangement and the movement across the alignment of the row in parallel to the plane extent of the component composite arrangement through routine experimentation, thus aids in achieving the speed rate by irradiating a plurality of laser beam (col. 2, lines 18-21).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught Nakata in combination with Lutz/Tanaka due to above reason.

**Re claim 12**, Lutz/Tanaka do not teach the diode laser composite arrangement is designed as a diode laser matrix arrangement having a plurality of diode lasers each arranged in rows and columns.

**Nakata** teaches, as shown in Fig. 26, col. 4, lines 54-65, and col. 8, lines 31-44, the diode laser composite arrangement is designed as a diode laser matrix arrangement having a plurality of diode lasers each arranged in rows and columns.

As taught by Nakata, one of ordinary skill in the art would utilize the above teaching to have a diode laser matrix arrangement, because it aids in increasing the speed rate by irradiating a plurality of laser beams (col. 2, lines 18-21).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught Nakata in combination with Lutz/Tanaka due to above reason.

**Re claim 13**, Lutz/Tanaka do not teach the diode lasers of the diode laser matrix arrangement can be activated individually or in groups such that with a coaxial alignment of the surface midpoints of the contact surface of the component composite arrangement and of the matrix surface for acting upon the circular contact surface, the diode lasers can be



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activated according to the size of the contact surface either in a totality or only to the extent of a partial matrix required for coverage of the contact surface.

**Nakata** teaches, as shown in Figs. 2 and 26, the diode laser (101) of the diode laser matrix arrangement, and the diode laser can be activated by individually or group (see abstract, col. 4, lines 54-65, and col. 8, lines 31-44, col. 18, lines 24-30).

As taught by Nakata, one of ordinary skill in the art would utilize the diode and its operation function in order to active the diode laser according to the size of the contact surface either in a totality or only to the extent of a partial matrix required for coverage of the contact surface. As a result, the cost and the time decrease, since the laser radiation can be concentrated on a particular area or whole area of the contact surface.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught Nakata in combination with Lutz/Tanaka due to above reason.

**Re claim 14**, referred claim 13 for the diode laser composite arrangement, Lutz/Nakata do not teach a transmission device which serves to measure a reference temperature is provided in an intermediate space formed by a distance between the transparent panel and the diode laser composite arrangement.

**Tanaka** teaches, as shown in Fig. 3, col. 4, lines 43-62, the irradiation beam system provides a high thermal energy from below (a distance is formed) a transparent coating layer.

As taught by Tanaka, one of ordinary skill in the art would utilize an irradiation beam system to control a high thermal energy. For controlling the low and high energy, a measure or sensing device must be applied and/or built in the laser system, since it is known in the

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art to one when working on a high thermal process, especially in the semiconductor fabrication process. As the result, any damages may occur to the wafers during the thermal process can be avoided.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught Tanaka in combination with Lutz/Nakata due to above reason.

**Re claim 15**, Lutz/Tanaka teach for alignment of the contact metallization in a coverage position to form the contact pairs, and the component composite arrangement (7) opposite the component composite arrangement (12) that is exposed to laser radiation (Tanaka Fig. 4) at the rear (see Tanaka reference) is arranged in a positioning device that can be moved in at least two axes (see Lutz Fig. 5 and col. 8, lines 20-23).

6. **Clam 16** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Lutz** as modified by **Tanaka/Nakata** and further in view of **Yasumoto et al.** (US 4,612,083, "Yasumoto").

The teachings of Lutz/Tanaka/Nakata have been discussed above.

**Re claim 16**, referred to claim 15 for the positioning device, Lutz/Tanaka/Nakata do teach the positioning device is designed to **be triaxial** such that in addition to a biaxial positioning of the component composite arrangement in the plane of extent of the component composite arrangement, the positioning device serves to execute an adjusting movement across the plane of extent such that the positioning device serves to create the contact pressure.

**Yasumoto** teaches the positioning device (aligned system) is designed to be triaxial (three perpendicular transverse directions) such that in addition to a biaxial positioning of

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the component composite arrangement (10, 10') in the plane of extent of the component composite arrangement (10, 10'), the positioning device (aligned system) serves to execute an adjusting movement across the plane of extent such that the positioning device serves to create the contact pressure (see col. 6, lines 58-68, and col. 7, lines 1-55).

As taught by Yasumoto, one of ordinary skill in the art would utilize a aligned system and its operation functions so that to have a positioning device to be triaxial, because it aids in increasing the fabrication yield of three dimensional semiconductor devices (col. 13, lines 30-33).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the teaching as taught Yasumoto in combination with Lutz/Tanaka/Nakata due to above reason.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DUY T. NGUYEN whose telephone number is (571) 270-7431. The examiner can normally be reached on Monday-Friday, 7:30 Am - 5:00 Pm (alternative Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Nguyen can be reached on (571) 272-2402. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DUY T NGUYEN/  
Examiner, Art Unit 2894  
7/12/10

/THANH V. PHAM/  
Primary Examiner, Art Unit 2894